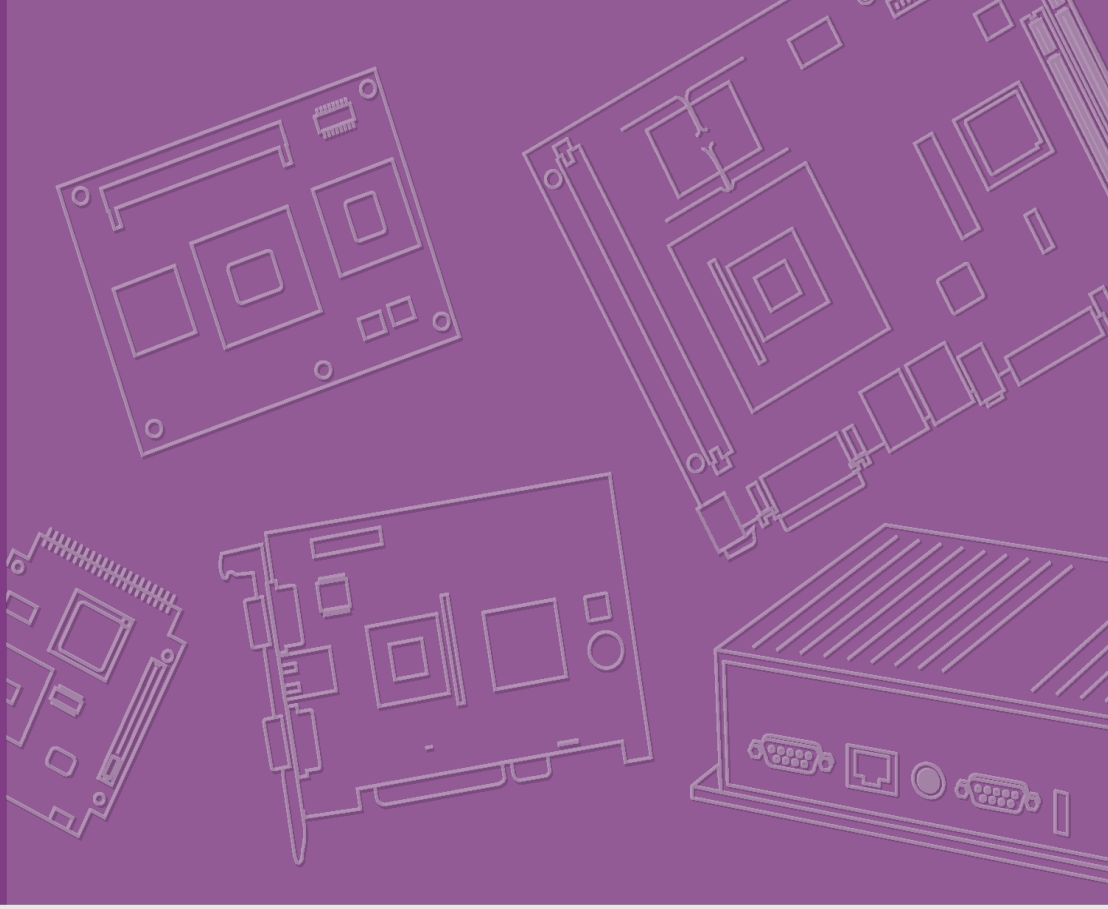

# User Manual

# SOM-AB5500

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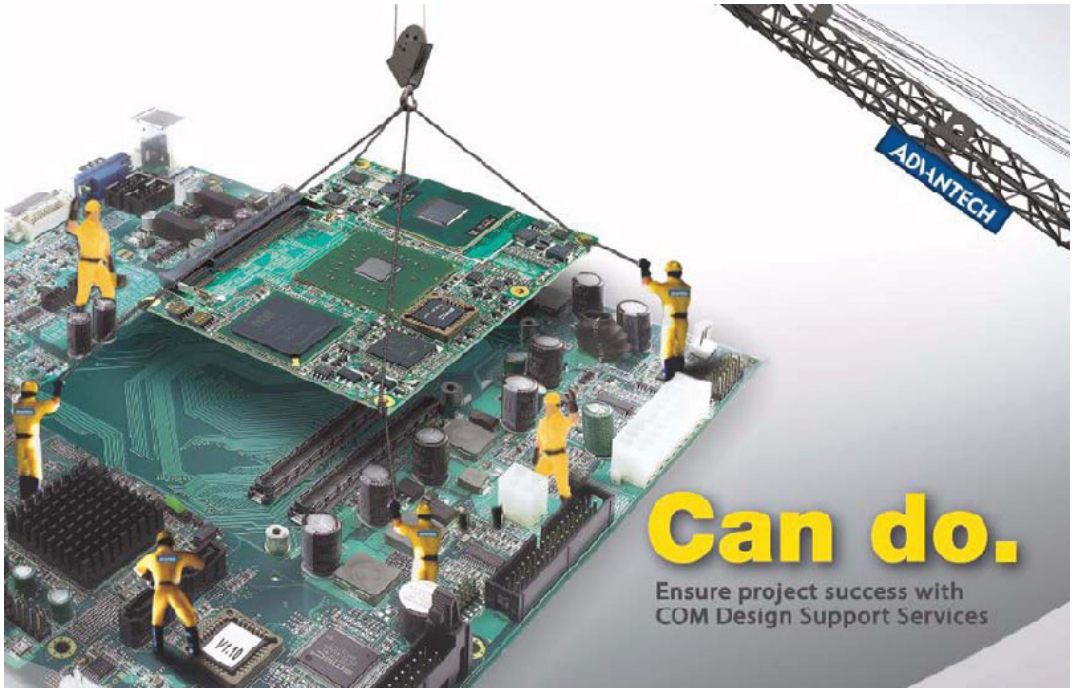
# COM Design Support

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2. Contact your distributor, sales representative, or Advantech's customer service center for technical support if you need additional assistance. Please have the following information ready before you call:
   - Product name and serial number
   - Description of your peripheral attachments
   - Description of your software (operating system, version, application software, etc.)
   - A complete description of the problem
   - The exact wording of any error messages

# Safety Instructions

1. Read these safety instructions carefully.
2. Keep this User Manual for later reference.
3. Disconnect this equipment from any AC outlet before cleaning. Use a damp cloth. Do not use liquid or spray detergents for cleaning.
4. For plug-in equipment, the power outlet socket must be located near the equipment and must be easily accessible.
5. Keep this equipment away from humidity.
6. Put this equipment on a reliable surface during installation. Dropping it or letting it fall may cause damage.
7. The openings on the enclosure are for air convection. Protect the equipment from overheating. DO NOT COVER THE OPENINGS.
8. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
9. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
10. All cautions and warnings on the equipment should be noted.
11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient overvoltage.
12. Never pour any liquid into an opening. This may cause fire or electrical shock.
13. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.
14. If one of the following situations arises, get the equipment checked by service personnel:
    - The power cord or plug is damaged.
    - Liquid has penetrated into the equipment.
    - The equipment has been exposed to moisture.
    - The equipment does not work well, or you cannot get it to work according to the user's manual.
    - The equipment has been dropped and damaged.
    - The equipment has obvious signs of breakage.

# Safety Precaution - Static Electricity

Follow these simple precautions to protect yourself from harm and the products from damage.

- To avoid electrical shock, always disconnect the power from your PC chassis before you work on it. Don't touch any components on the CPU card or other cards while the PC is on.
- Disconnect power before making any configuration changes. Electrostatic discharge as you connect a jumper or install a card may damage sensitive electronic components.

# Packing List

Before you begin installing your card, please make sure that the following materials have been shipped:

- 1 SOM-AB5500 Carrier Board

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# Chapter 1

## Connector and Jumper Setting

## 1.1 Connectors and Jumper Setting

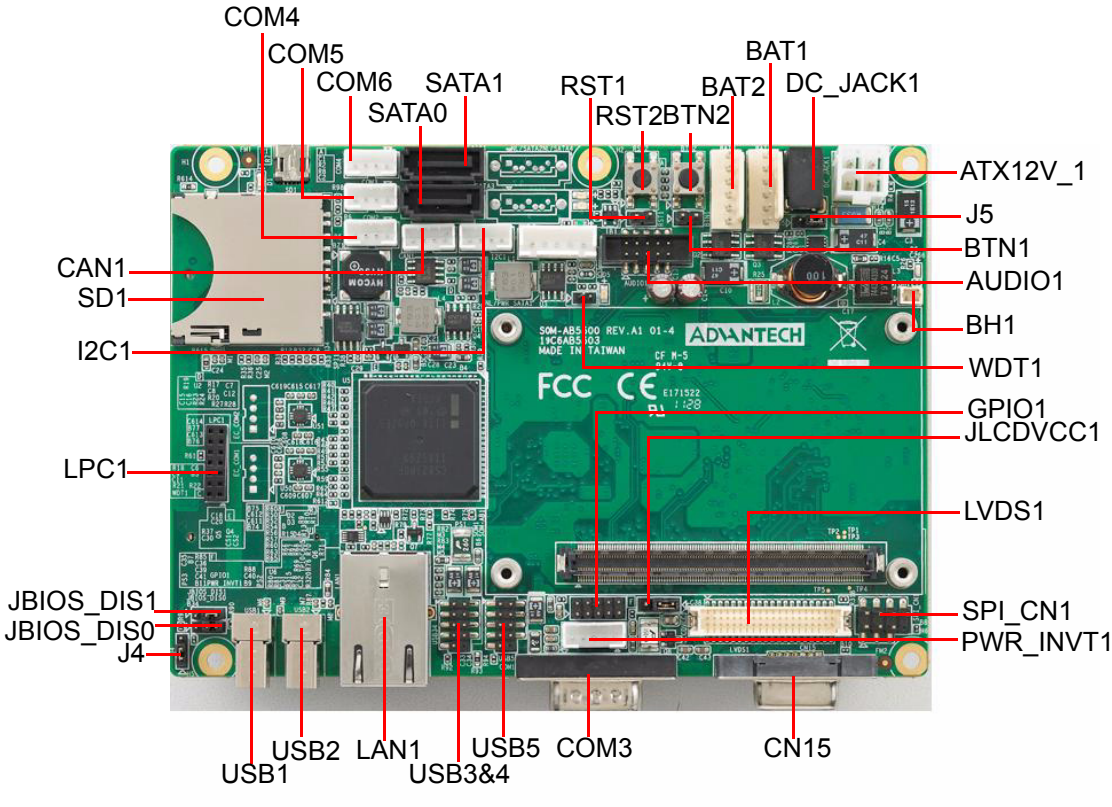


**Figure 1.1 SOM-AB5500 PCB Top View**

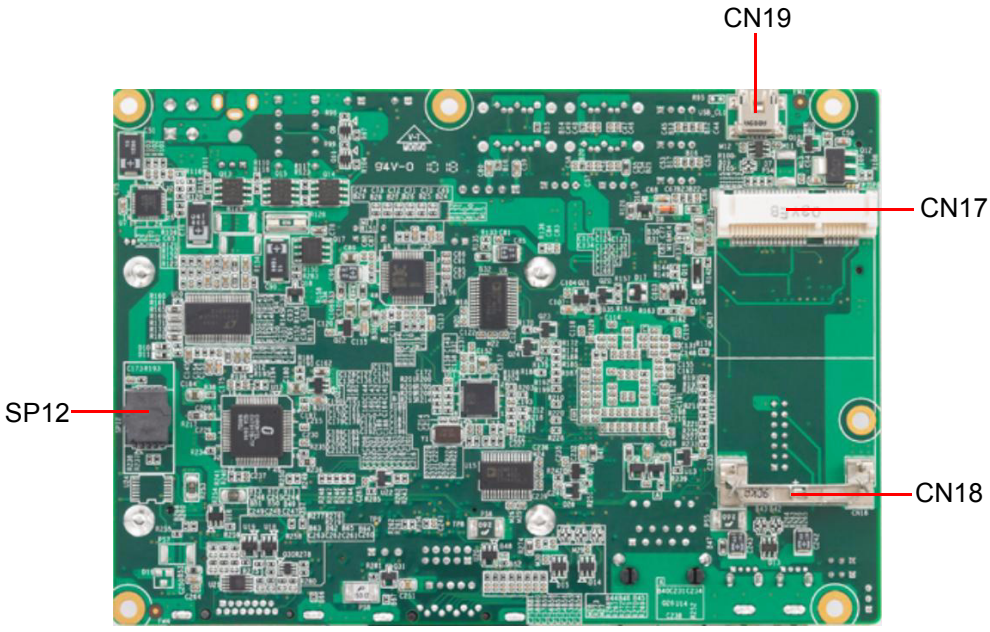


**Figure 1.2 SOM-AB5500 Bottom View**

## 1.2 Connector List

| | |
|---|---|
| LAN1 | LAN RJ45 connector |
| USB1 | USB1 connector |
| USB2 | USB2 connector |
| CN15 | CRT output |
| COM3 | COM port3 connector |
| COM4 | COM port4 connector |
| COM5 | COM port5 connector |
| COM6 | COM port6 connector |
| CAN1 | CAN BUS connector |
| SATA0 | SATA 0 connector |
| SATA1 | SATA1 connector |
| USB 3&4 | USB3 and USB4 connector |
| USB5 | USB5 connector |
| CN19 | USB_CLIENT connector |
| AUDIO1 | Audio Connector |
| LVDS1 | LVDS1 Connector |
| PWR_INVT1 | INVERTER power connector |
| LPC1 | LPC connector |
| BH1 | RTC battery connector |
| GPIO1 | GPIO connector |
| WDT1 | Watch dog test connector |
| ATX12V_1 | ATX power input |
| DC_JACK1 | DC power input |
| RST1 | RST test connector |
| BTN1 | Power Button test connector |
| BAT1 | Battery input connector 1 |
| BAT2 | Battery input connector 2 |
| CN17& CN18 | Mini PCIE connector |

## 1.3 Jumper Setting and Switch List

| | |
|---|---|
| JLCDVCC1 | LVDS power setting connector |
| JBIOS_DIS0 | BIOS0 disable connector |
| JBIOS_DIS1 | BIOS1 disable connector |
| J5 | CLEAR CMOS connector |
| BTN1 | Power button |
| RST1 | Reset button |
| J4 | AT/ATX mode jumper |

## 1.4 Connector Pin Name Definition

| Table 1.1: LAN1: LAN RJ45 Connector #: low active | |
|---|---|
| **Pin** | **Pin name** |
| 1 | LAN1_MDI0+ |
| 2 | LAN1_MDI0- |
| 3 | LAN1_MDI1+ |
| 4 | LAN1_MDI1- |
| 5 | GBE_CTREF |
| 6 | GBE_CTREF |
| 7 | LAN1_MDI2+ |
| 8 | LAN1_MDI2- |
| 9 | LAN1_MDI3+ |
| 10 | LAN1_MDI3- |
| 11 | LAN1_ACT# |
| 12 | +V3.3SB |
| 13 | LAN1_LINK100# |
| 14 | LAN1_LINK1000# |
| H3 | GND_F |
| H4 | GND_F |

| Table 1.2: USB1:USB Connector | |
|---|---|
| **Pin** | **Pin name** |
| 1 | +V5SB_USB01 |
| 2 | USB0_z_P- |
| 3 | USB0_z_P+ |
| 4 | GND |
| 5 | GND_F |
| 6 | GND_F |
| 7 | GND_F |

| Table 1.3: USB2: USB Connector | |
|---|---|
| **Pin** | **Pin name** |
| 1 | +V5SB_USB01 |
| 2 | USB1_z_P- |
| 3 | USB1_z_P+ |
| 4 | GND |
| 5 | GND_F |
| 6 | GND_F |
| 7 | GND_F |

| Table 1.4: CN15: CRT Connector | |
|---|---|
| **Pin** | **Pin name** |
| 1 | VGA_z_R |
| 2 | VGA_z_G |
| 3 | VGA_z_B |
| 4 | NC |
| 5 | GND |
| 6 | GND |
| 7 | GND |
| 8 | GND |
| 9 | +V5_VGA |
| 10 | GND |
| 11 | NC |
| 12 | VGA_y_DDAT |
| 13 | VGA_x_HS |
| 14 | VGA_x_VS |
| 15 | VGA_y_DCLK |
| 16 | NC |
| 17 | NC |
| 18 | GND_FRAME2 |
| 19 | GND_FRAME1 |

| Table 1.5: COM3: COM Port Connector #: low active | |
|---|---|
| **Pin** | **Pin name** |
| 1 | COM0_z_DCD# |
| 2 | COM0_z_RXD |
| 3 | COM0_z_TXD |
| 4 | COM0_z_DTR# |
| 5 | GND |
| 6 | COM0_z_DSR# |
| 7 | COM0_z_RTS# |
| 8 | COM0_z_CTS# |
| 9 | COM0_z_RI# |
| 10 | NC |
| 11 | NC |
| 12 | GND_FRAME |
| 13 | GND_FRAME1 |

| Table 1.6: COM4: COM Port Connector | |
|---|---|
| **Pin** | **Pin name** |
| 1 | NC |
| 2 | COM1_z_RXD |
| 3 | COM1_z_TXD |
| 4 | NC |

| Table 1.7: COM5: COM Port Connector | |
|---|---|
| **Pin** | **Pin name** |
| 1 | NC |
| 2 | COM2_z_RXD |
| 3 | COM2_z_TXD |
| 4 | NC |

| Table 1.8: COM6: COM Port Connector | |
|---|---|
| **Pin** | **Pin name** |
| 1 | NC |
| 2 | COM3_z_RXD |
| 3 | COM3_z_TXD |
| 4 | NC |

| Table 1.9: SATA0: SATA0 Connector (TopCliff) | |
|---|---|
| **Pin** | **Pin name** |
| 1 | GND |
| 2 | SATA2_z_TX+ |
| 3 | SATA2_z_TX- |
| 4 | GND |
| 5 | SATA2_z_RX- |
| 6 | SATA2_z_RX+ |
| 7 | GND |

| Table 1.10: SATA1: SATA1 Connector (TopCliff) | |
|---|---|
| **Pin** | **Pin name** |
| 1 | GND |
| 2 | SATA3_z_TX+ |
| 3 | SATA3_z_TX- |
| 4 | GND |
| 5 | SATA3_z_RX- |
| 6 | SATA3_z_RX+ |
| 7 | GND |

| Table 1.11: USB3&4: USB3 & USB4 Connector | |
|---|---|
| **Pin** | **Pin name** |
| 1 | +V5SB_USB23 |
| 2 | +V5SB_USB23 |
| 3 | USB2_z_P- |
| 4 | USB3_z_P- |
| 5 | USB2_z_P+ |
| 6 | USB3_z_P+ |
| 7 | GND |
| 8 | GND |
| 9 | GND_FRAME |

| Table 1.12: USB5: USB5 Connector | |
|---|---|
| **Pin** | **Pin name** |
| 1 | +V5SB_USB4 |
| 2 | NC |
| 3 | USB4_z_P- |
| 4 | NC |
| 5 | USB4_z_P+ |
| 6 | NC |
| 7 | GND |
| 8 | GND |
| 9 | GND_FRAME |

| Table 1.13: CN19: USB Client Connector | |
|---|---|
| **Pin** | **Pin name** |
| 1 | +V5_USB1_CLIENT |
| 2 | USB_z_Client_P- |
| 3 | USB_z_Client_P+ |
| 4 | GND_FRAME_USB |
| 5 | GND_FRAME_USB |

| Table 1.14: Audio1: Audio Connector | |
|---|---|
| **Pin** | **Pin name** |
| 1 | LOUTR |
| 2 | LINR |
| 3 | GND_AUD |
| 4 | GND_AUD |
| 5 | LOUTL |
| 6 | LINL |
| 7 | GND_AUD |
| 8 | GND_AUD |
| 9 | MIC1R |
| 10 | MIC1L |

| Table 1.15: LVDS1: LVDS  Connector | |
|---|---|
| **Pin** | **Pin name** |
| 1 | +V_LCD |
| 2 | +V_LCD |
| 3 | GND |
| 4 | GND |
| 5 | +V_LCD |
| 6 | +V_LCD |
| 7 | LVDS0_D0- |
| 8 | NC |
| 9 | LVDS0_D0+ |
| 10 | NC |
| 11 | GND |
| 12 | GND |
| 13 | LVDS0_D1- |
| 14 | NC |
| 15 | LVDS0_D1+ |
| 16 | NC |
| 17 | GND |
| 18 | GND |
| 19 | LVDS0_D2- |
| 20 | NC |
| 21 | LVDS0_D2+ |
| 22 | NC |
| 23 | GND |
| 24 | GND |
| 25 | LVDS0_CLK- |
| 26 | NC |
| 27 | LVDS0_CLK+ |
| 28 | NC |
| 29 | GND |
| 30 | GND |

| Table 1.15: LVDS1: LVDS Connector | |
|---|---|
| 31 | LVDS_DDC_CLK |
| 32 | LVDS_DDC_DAT |
| 33 | GND |
| 34 | GND |
| 35 | LVDS0_D3- |
| 36 | NC |
| 37 | LVDS0_D3+ |
| 38 | NC |
| 39 | GND |
| 40 | NC |

| Table 1.16: PWR_INVT1: IINVERTER Power Connector | |
|---|---|
| **Pin** | **Pin name** |
| 1 | +V12_INV0 |
| 2 | GND |
| 3 | LVDS_BKLTEN |
| 4 | LVDS0_VBR |
| 5 | +V5_INV0 |

| Table 1.17: LPC1: LPC Connector #: low active | |
|---|---|
| **Pin** | **Pin name** |
| 1 | CLK33M_LPC |
| 2 | LPC_AD1 |
| 3 | RST_LPC# |
| 4 | LPC_AD0 |
| 5 | LPC_FRAME# |
| 6 | +V3.3 |
| 7 | LPC_AD3 |
| 8 | GND |
| 9 | LPC_AD2 |
| 10 | +V3.3 |
| 11 | LPC_SIRQ |
| 12 | RST_PLC# |
| 13 | +V5SB |
| 14 | +V5 |

| Table 1.18: BH1: RTC Battery Connector | |
|---|---|
| **Pin** | **Pin name** |
| 1 | +VBATT |
| 2 | GND |

| Table 1.19: GPIO1: GPIO Connector | |
|---|---|
| **Pin** | **Pin name** |
| 1 | GPI0 |
| 2 | GPO0 |
| 3 | GPI1 |
| 4 | GPO1 |
| 5 | GPI2 |
| 6 | GPO2 |
| 7 | GPI3 |
| 8 | GPO3 |
| 9 | GND |
| 10 | GND |

| Table 1.20: WDT1: Watchdog Test Connector | |
|---|---|
| **Pin** | **Pin name** |
| 1 | WDT |
| 2 | GND |

| Table 1.21: ATX12V_1: ATX Power input Connector | |
|---|---|
| **Pin** | **Pin name** |
| 1 | GND |
| 2 | GND |
| 3 | +VIN |
| 4. | +VIN |

| Table 1.22: DC_JACK1  DC Power Input Connector | |
|---|---|
| **Pin** | **Pin name** |
| 1 | +VIN |
| 2 | GND |
| 3 | GND |

| Table 1.23: RST1: Rest Button Test Connector  #: low active | |
|---|---|
| **Pin** | **Pin name** |
| 1 | PM_EXTRST# |
| 2 | GND |

| Table 1.24: BTN1: Power Button Test Connector  #: low active | |
|---|---|
| **Pin** | **Pin name** |
| 1 | PM_PWRBTN# |
| 2 | GND |

| Table 1.25: BAT1: Battery Input Connector1 | |
|---|---|
| **Pin** | **Pin name** |
| 1 | GND |
| 2 | BAT_THER1 |
| 3 | BAT1_ID_CN |
| 4 | SDA1_LTC1760 |
| 5 | SCL1_LTC1760 |
| 6 | BAT1 |

| Table 1.26: BAT2: Battery Input Connector2 | |
|---|---|
| **Pin** | **Pin name** |
| 1 | GND |
| 2 | BAT_THER2 |
| 3 | BAT2_ID_CN |
| 4 | SDA2_LTC1760 |
| 5 | SCL2_LTC1760 |
| 6 | BAT2 |

| Table 1.27: CN17: Mini PCIe Connector #: low active | | | |
|---|---|---|---|
| **Pin** | **Pin name** | **Pin** | **Pin name** |
| 1 | PCIE_WAKE# | 2 | +V3.3_MPCIE1 |
| 3 | MPCIE1_BTDATA | 4 | GND |
| 5 | MPCIE1_BTCLK | 6 | +V1.5 |
| 7 | NC | 8 | NC |
| 9 | GND | 10 | NC |
| 11 | CLK_MINI_PCIE- | 12 | NC |
| 13 | CLK_MINI_PCIE+ | 14 | NC |
| 15 | GND | 16 | NC |
| 17 | NC | 18 | GND |
| 19 | NC | 20 | MINI_DISABLE# |
| 21 | GND | 22 | RST_MINI# |
| 23 | PCIE1X1_MINI_RX- | 24 | +V3.3SB |
| 25 | PCIE1X1_MINI_RX+ | 26 | GND |
| 27 | GND | 28 | +V1.5 |
| 29 | GND | 30 | SMB_CLK |
| 31 | PCIE1X1_MINI_TX- | 32 | SMB_DAT |
| 33 | PCIE1X1_MINI_TX+ | 34 | GND |
| 35 | GND | 36 | USB_Mini_P- |
| 37 | NC | 38 | USB_Mini_P+ |
| 39 | NC | 40 | GND |
| 41 | NC | 42 | NC |
| 43 | NC | 44 | NC |
| 45 | NC | 46 | NC |
| 47 | NC | 48 | +V1.5 |

| Table 1.27: CN17: Mini PCIe Connector #: low active | | | |
|---|---|---|---|
| 49 | NC | 50 | GND |
| 51 | NC | 52 | +V3.3_MPCIE1 |
| 53 | NC | 54 | NC |
| 55 | GND | 56 | GND |

| Table 1.28: CN18: Mini PCIe Connector | |
|---|---|
| **Pin** | **Pin name** |
| 1 | GND |
| 2 | GND |
| 3 | GND |
| 4 | GND |
| 5 | NC |
| 6 | NC |

| Table 1.29: JLCDVCC1: LVDS Power Setting Connector | |
|---|---|
| **Pin** | **Pin name** |
| 1 | +V3.3 |
| 2 | +V_LCDVCC0 |
| 3 | +V5 |

## 1.5 Jumper Setting Function

| Table 1.30: JBIOS_DIS0: BIOS0 Disable Connector #: low active | |
|---|---|
| **Pin** | **Function** |
| 1 | BIOS_DIS0# |
| 2 | GND |
| 4 | NC |

| Table 1.31: JBIOS_DIS1: BIOS1 Disable Connector #: low active | |
|---|---|
| **Pin** | **Function** |
| 1 | BIOS_DIS1# |
| 2 | GND |
| 5 | NC |

| Table 1.32: J5: CMOS Clear Connector | |
|---|---|
| **Pin** | **Function** |
| 1 | GND |
| 2 | +VBAT_C |
| 3 | +VBATT |

| Table 1.33: BTN1: Power Button Connector #: low active | |
|---|---|
| **Pin** | **Function** |
| 1 | PM_PWRBTN# |
| 2 | GND |

| Table 1.34: RST1: Power Button Connector #: low active | |
|---|---|
| **Pin** | **Function** |
| 1 | PM_EXTRST# |
| 2 | GND |

| Table 1.35: J4: AT/ATX Mode Jumper | |
|---|---|
| **Pin** | **Function** |
| 1 | NC |
| 2 | PS_ON2 |
| 3 | +V3.3SB |

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